September 3, 2024

Federal Communications Commission
Wireless Telecommunications Bureau
Office of Engineering and Technology
45L Street, NE
Washington, D.C. 20554

Ref: Reply comments to WT Docket No. 24.240, RM-11989 (filed electronically)

My name is Chuck Robertson, and I am filing these comments in opposition to this NextNav Inc. proposal.

I have reviewed the Public Notice Released on August 6, 2024. It should be rejected on its face.

Page 4:

- NextNav says it will work with all the incumbents in the band including Amateur Radio and Part 15 devices. I know of no known outreach to Amateur Radio and exactly how they are going to work to provide protection to the countless Part 15 devices? Seems untenable to me.

Page 5:

- NextNav indicates that its PNT solution would only use a small portion of the 10-megahertz capacity. Then why completely rearrange the 900MHz band to do this?
- Proposal states would provide a windfall for excess capacity to "partner" with "others" for broadband. Why would the FCC provide a windfall to NextNav at the expense of others? Do we not have sufficient spectrum for broadband that we must remove / rearrange a portion of the 900MHz band and give it to NextNav to increase their windfall?

I echo the comments filed by Thomas Apel, Amateur Radio Call Sign K5TRA, attached. As an RF Engineer who also works in Public Safety Emergency Communications, I suggest this proposal was not well thought out and vetted. In Idaho as across the country losing 902-903MHz and 927-928MHz would destroy Amateur Radio repeaters in the band and eviscerate FCC Part 97 Subpart A 97.1 Basis and Purpose with respect to 900MHz Amateur Radio advancement of the radio art.

The financial impact to me personally would be in the thousands of dollars and hundreds of hours of design, construction and implementation. I have another system under development on the bench right now.

The following are currently in operation in Idaho.

927.1625MHz – Cascade
927.1250MHz – Payette
927.1125MHz – Shafer Butte
927.1875MHz – Hat Butte
927.0500MHz – Payette
927.5875MHz – Caldwell

I respectfully request this proposal be denied and other spectrum options investigated and evaluated keeping the following criteria in mind.

1. NO unnecessary windfalls.
2. Spectrum awarded solely on what is required for PNT – NO spare speculative spectrum for future.
3. Clearly defined rules / regulations / penalties to not interfere with Amateur Radio or any other incumbents using the band.

Thank you for considering my comments.

Respectfully submitted,

--
Chuck Robertson | N7CVR
RF Engineer
FCC Licensed | CommScope Certified | ETA F.O.I Certified
Squaw Butte DMR Amateur Radio Repeater System - n7cvr.net
C-Bridge Network Administrator
Squaw Butte 900MHz Amateur Radio Repeater System - allstarlink.org
Wood River Amateur Radio Club – wrarc.org
Member - AT&T FirstNet
n7cvr@pm.me
208.880.3838

WT Docket No. 24-240 COMMENTS

My name is Thomas Apel. I am a retired RFIC electrical engineer and licensed amateur radio operator since 1963. I have been active on 900 MHz for nearly 20 years. I've personally built **26** repeaters and approximately **30** half-duplex stations, all on 900 MHz.

Along with other hams across the US, we've built a linked network of 900 MHz repeaters.

All of the repeater equipment (transmitter / receiver radios, duplexers, power amplifiers, preamplifiers, etc.) are repurposed commercial 900 MHz band equipment. All the user radios (mobile, portable, and fixed) are also repurposed commercial equipment. Due to the limitations of the commercial hardware, amateur radio repeaters operate with a 25 MHz split: 902 MHz input / 927 MHz output. The result is a large population of hams using 900 MHz repeaters across the US. Loss of the 902-903 and 927-928 MHz segments would effectively kill amateur radio use of the 33cm band.

In addition to FM and P25 operation on 900 MHz, hams also operate SSB (single sideband), CW (Morse code), and digital mode point to point communications. This is sometimes called "weak-signal" communications. Weak-signal operation is either terrestrial or EME (moon bounce). Operating frequencies for weak-signal is often around 902.1000 MHz (903.1 MHz is used in some states).

I am also active on 902.1000 weak-signal with a homebrew transverter, 100W, 17 element Yagi.

KEY POINTS TO REMEMBER

- Many 900 MHz repeaters with 25 MHz split have been operational in the US for more than two decades. Repeater input frequencies are 902 – 903 MHz, many are in the lower end of that range. Repeater output frequencies are 927 – 928 MHz.
- Amateur radio FM operation uses repurposed commercial radios (Motorola, Kenwood, etc).
- A 25 MHz repeater split is used due to limitations of commercial 900 MHz equipment.
- Amateur radio use of the 900 MHz band includes: FM repeaters, P25 and DMR repeaters, "weak-signal", and EME (moon-bounce). FM repeaters and half-duplex nodes comprises the largest population.
- RepeaterBook.com shows 599 US repeaters currently in operation on the 900 MHz band.

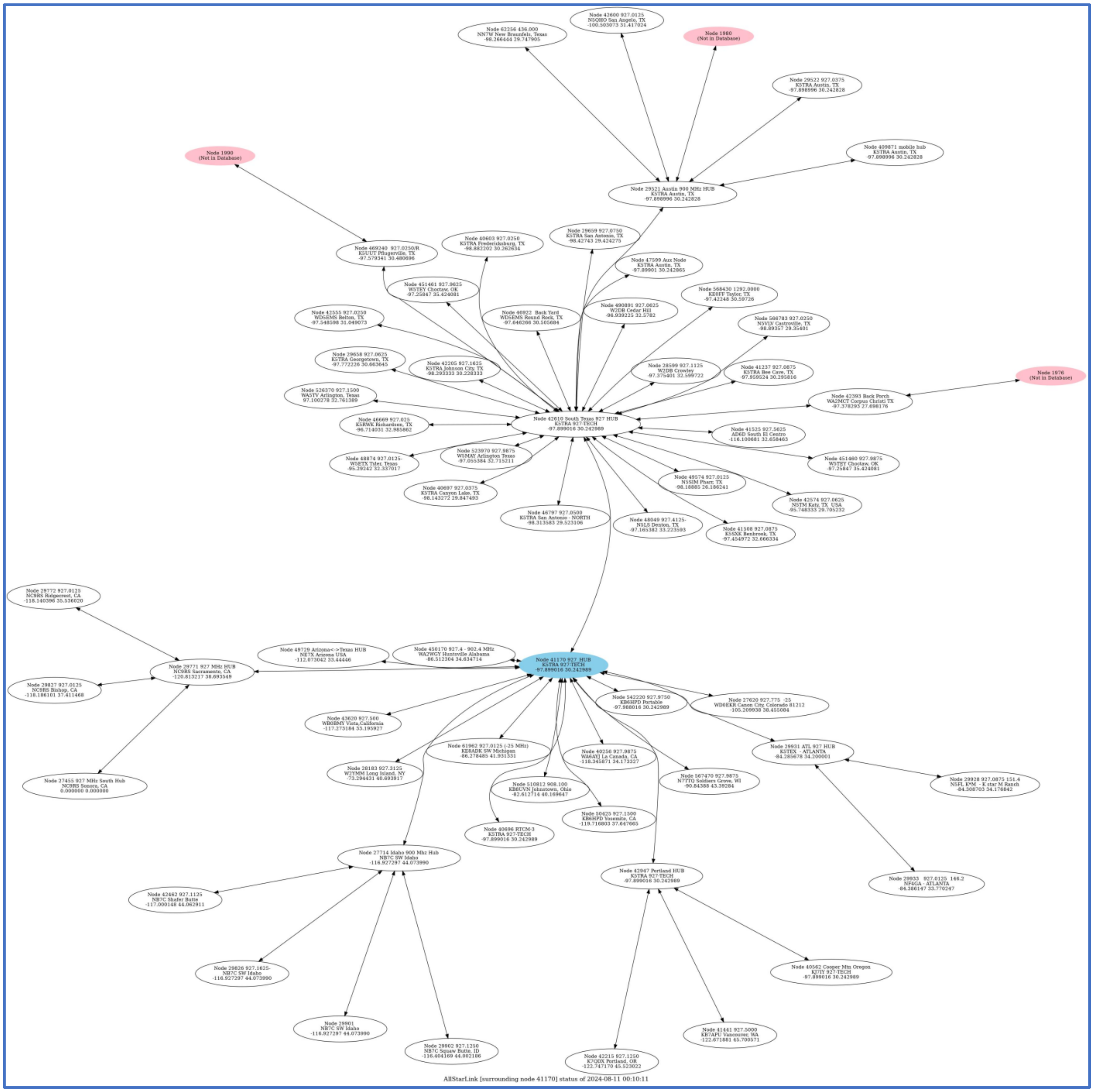
LINKED NETWORKS OF 900 MHz REPEATERS

- Several large internet-linked (wide area) repeater networks are currently in operation. These include ones in Arizona, Texas, Northern California, and New England.
- The 927-TECH is one such group that is illustrative of the 900 MHz fraternity. It has existed for more than a decade. Typically, we have repeaters and subgroups connected from Washington, Oregon. California, Idaho, Colorado, Texas, Oklahoma, Wisconsin, Georgia, Alabama, Michigan, Ohio, and New York. A snapshot of current connections can be seen in Fig. 1. In cases where RF linking of repeaters is used, one "bubble" in Fig. 1 represents a number of repeaters. For example, the NC9RS Northern California system has a dozen repeaters. The K5TRA Austin HUB "bubble" represents four RF linked repeaters. A real-time link to current connections: https://stats.allstarlink.org/getstatus.cgi?41170 .
- To further drill down, the Texas linked portion of the 927-TECH network is listed in Fig. 2. This network reaches from N.TX to the Gulf coast and to W.TX.

EMERGENCY COMMUNICATIONS USE OF 900 MHz NETWORK IN TEXAS

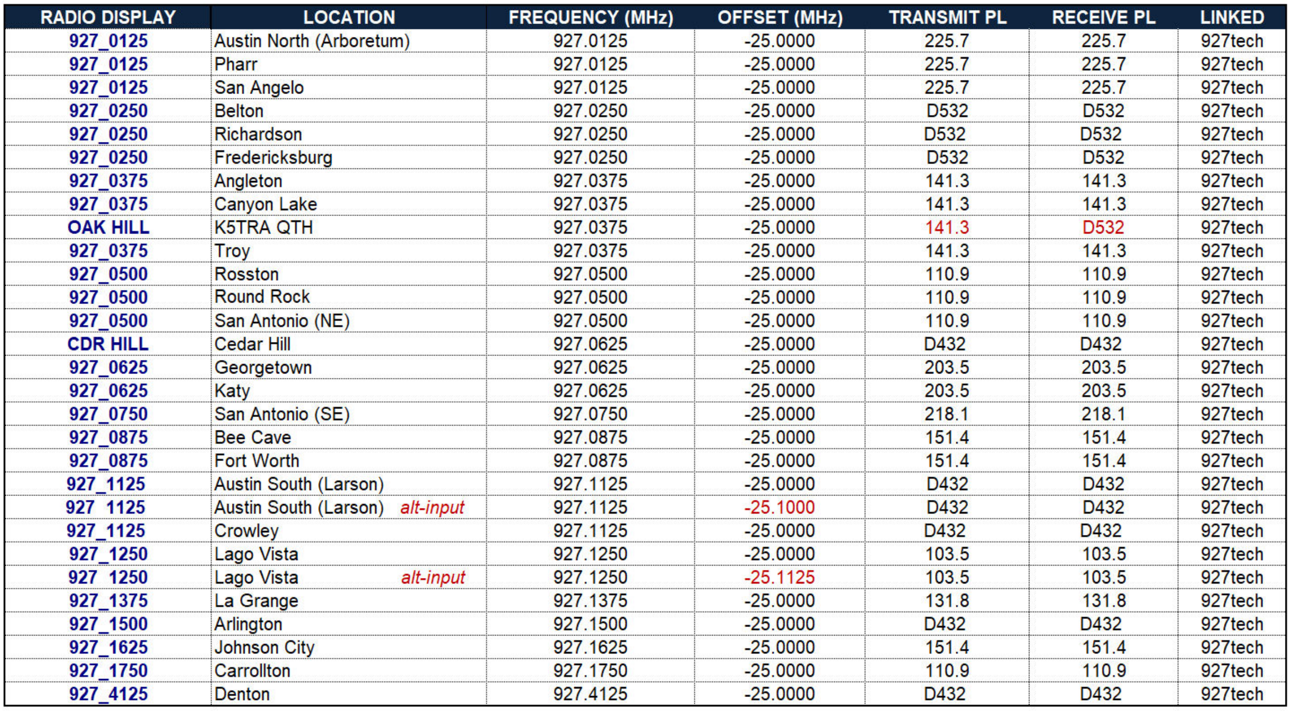
Texas RACES uses the Texas portion of the 900 MHz repeater network during exercises and actual incident response requests by the TDEM (Texas Division of Emergency Management) Disaster District Chiefs or the TDEM Communications Coordination Group manager.

Roy Walker
1A Tx RACES
WA5YZD
512-461-0220 (mobile)


Node 62256 436.000 NN7W New Braunfels, Texas -98.266444 29.747905
Node 42600 927.0125 N5QHO San Angelo, TX -100.503073 31.417024
Node 1980 (Not in Database)
Node 29522 927.0375 K5TRA Austin, TX -97.898996 30.242828
Node 1990 (Not in Database)
Node 409871 mobile hub K5TRA Austin, TX -97.898996 30.242828
Node 29521 Austin 900 MHz HUB K5TRA Austin, TX -97.898996 30.242828
Node 40603 927.0250 K5TRA Fredericksburg, TX -98.882202 30.262634
Node 29659 927.0750 K5TRA San Antonio, TX -98.42743 29.424275
Node 469240 927.0250/R K5UUT Pflugerville, TX -97.579341 30.480696
Node 47599 Aux Node K5TRA Austin, TX -97.89901 30.242865
Node 451461 927.9625 W5TEY Choctaw, OK -97.25847 35.424081
Node 568430 1292.0000 KE0FF Taylor, TX -97.42248 30.59726
Node 42555 927.0250 WD5EMS Belton, TX -97.548598 31.049073
Node 46922 Back Yard WD5EMS Round Rock, TX -97.646266 30.505684
Node 490891 927.0625 W2DB Cedar Hill -96.939225 32.5782
Node 566783 927.0250 N5VLV Castroville, TX -98.89357 29.35401
Node 29658 927.0625 K5TRA Georgetown, TX -97.772226 30.663645
Node 42205 927.1625 K5TRA Johnson City, TX -98.293333 30.228333
Node 28599 927.1125 W2DB Crowley -97.375401 32.599722
Node 41237 927.0875 K5TRA Bee Cave, TX -97.959524 30.295816
Node 1976 (Not in Database)
Node 526370 927.1500 WA5TV Arlington, Texas 97.100278 32.761389
Node 42393 Back Porch WA2MCT Corpus Christi TX -97.378293 27.698176
Node 42610 South Texas 927 HUB K5TRA 927-TECH -97.899016 30.242989
Node 46669 927.025 K5RWK Richardson, TX -96.714031 32.985862
Node 41525 927.5625 AD6D South El Centro -116.100681 32.658463
Node 48874 927.0125- W5ETX Tyler, Texas -95.29242 32.337017
Node 523970 927.9875 W5MAY Arlington Texas -97.055384 32.715211
Node 451460 927.9875 W5TEY Choctaw, OK -97.25847 35.424081
Node 49574 927.0125 N5SIM Pharr, TX -98.18885 26.186241
Node 40697 927.0375 K5TRA Canyon Lake, TX -98.143272 29.847493
Node 42574 927.0625 N5TM Katy, TX USA -95.748333 29.705232
Node 46797 927.0500 K5TRA San Antonio - NORTH -98.313583 29.523106
Node 48049 927.4125- N5LS Denton, TX -97.165382 33.223593
Node 41508 927.0875 K5SXK Benbrook, TX -97.454972 32.666334
Node 29772 927.0125 NC9RS Ridgecrest, CA -118.140396 35.536020
Node 49729 Arizona<->Texas HUB NE7X Arizona USA -112.073042 33.44446
Node 450170 927.4 - 902.4 MHz WA2WGY Huntsville Alabama -86.512304 34.634714
Node 41170 927 HUB K5TRA 927-TECH -97.899016 30.242989
Node 29771 927 MHz HUB NC9RS Sacramento, CA -120.813217 38.693549
Node 29827 927.0125 NC9RS Bishop, CA -118.186101 37.411468
Node 542220 927.9750 KB6HPD Portable -97.988016 30.242989
Node 27620 927.775 -25 WD0EKR Canon City, Colorado 81212 -105.209938 38.455084
Node 43620 927.500 WB0BMY Vista,California -117.273184 33.195927
Node 61962 927.0125 (-25 MHz) KE8ADK SW Michigan -86.278485 41.931331
Node 29931 ATL 927 HUB K5TEX - ATLANTA -84.285678 34.200001
Node 40256 927.9875 WA6AYJ La Canada, CA -118.345871 34.173327
Node 28183 927.3125 W2YMM Long Island, NY -73.294431 40.693917
Node 567470 927.9875 N7TTQ Soldiers Grove, WI -90.84388 43.39284
Node 29928 927.0875 151.4 N5FL K*M - K star M Ranch -84.308703 34.176842
Node 27455 927 MHz South Hub NC9RS Sonora, CA 0.000000 0.000000
Node 510812 908.100 KB8UVN Johnstown, Ohio -82.612714 40.169647
Node 50425 927.1500 KB6HPD Yosemite, CA -119.716803 37.647665
Node 40696 RTCM-3 K5TRA 927-TECH -97.899016 30.242989
Node 27714 Idaho 900 Mhz Hub NB7C SW Idaho -116.927297 44.073990
Node 42947 Portland HUB K5TRA 927-TECH -97.899016 30.242989
Node 29933 927.0125 146.2 NF4GA - ATLANTA -84.386147 33.770247
Node 42462 927.1125 NB7C Shafer Butte -117.000148 44.062911
Node 29826 927.1625- NB7C SW Idaho -116.927297 44.073990
Node 40562 Cooper Mtn Oregon KJ7IY 927-TECH -97.899016 30.242989
Node 29901 NB7C SW Idaho -116.927297 44.073990
Node 41441 927.5000 KB7APU Vancouver, WA -122.671881 45.700571
Node 29902 927.1250 NB7C Squaw Butte, ID -116.404169 44.002186
Node 42215 927.1250 K7QDX Portland, OR -122.747170 45.523022

AllStarLink [surrounding node 41170] status of 2024-08-11 00:10:11

FIGURE 1 – 927-TECH INTERNET LINKED 900 MHz NETWORK



RADIO DISPLAY	LOCATION	FREQUENCY (MHz)	OFFSET (MHz)	TRANSMIT PL	RECEIVE PL	LINKED
927_0125	Austin North (Arboretum)	927.0125	-25.0000	225.7	225.7	927tech
927_0125	Pharr	927.0125	-25.0000	225.7	225.7	927tech
927_0125	San Angelo	927.0125	-25.0000	225.7	225.7	927tech
927_0250	Belton	927.0250	-25.0000	D532	D532	927tech
927_0250	Richardson	927.0250	-25.0000	D532	D532	927tech
927_0250	Fredericksburg	927.0250	-25.0000	D532	D532	927tech
927_0375	Angleton	927.0375	-25.0000	141.3	141.3	927tech
927_0375	Canyon Lake	927.0375	-25.0000	141.3	141.3	927tech
OAK HILL	K5TRA QTH	927.0375	-25.0000	141.3	D532	927tech
927_0375	Troy	927.0375	-25.0000	141.3	141.3	927tech
927_0500	Rosston	927.0500	-25.0000	110.9	110.9	927tech
927_0500	Round Rock	927.0500	-25.0000	110.9	110.9	927tech
927_0500	San Antonio (NE)	927.0500	-25.0000	110.9	110.9	927tech
CDR HILL	Cedar Hill	927.0625	-25.0000	D432	D432	927tech
927_0625	Georgetown	927.0625	-25.0000	203.5	203.5	927tech
927_0625	Katy	927.0625	-25.0000	203.5	203.5	927tech
927_0750	San Antonio (SE)	927.0750	-25.0000	218.1	218.1	927tech
927_0875	Bee Cave	927.0875	-25.0000	151.4	151.4	927tech
927_0875	Fort Worth	927.0875	-25.0000	151.4	151.4	927tech
927_1125	Austin South (Larson)	927.1125	-25.0000	D432	D432	927tech
927 1125	Austin South (Larson) *alt-input*	927.1125	-25.1000	D432	D432	927tech
927_1125	Crowley	927.1125	-25.0000	D432	D432	927tech
927_1250	Lago Vista	927.1250	-25.0000	103.5	103.5	927tech
927 1250	Lago Vista *alt-input*	927.1250	-25.1125	103.5	103.5	927tech
927_1375	La Grange	927.1375	-25.0000	131.8	131.8	927tech
927_1500	Arlington	927.1500	-25.0000	D432	D432	927tech
927_1625	Johnson City	927.1625	-25.0000	151.4	151.4	927tech
927_1750	Carrollton	927.1750	-25.0000	110.9	110.9	927tech
927_4125	Denton	927.4125	-25.0000	D432	D432	927tech

FIGURE 2 –   TEXAS LINKED 900 MHz REPEATERS

IN SUMMARY

- To preserve amateur radio operation on the 900 MHz band, the 902-903 MHz and 927-928 MHz segments must be retained.
- The band is populated in many areas across the US with a significant investment from the amateur radio community.
- The band is used in emergency communications with clear channel cooperation from the users.

Thomas Apel   / K5TRA
7221 Covered Bridge Dr.
Austin, TX 78736
(503) 703-3377

WT Docket No. 24-240 COMMENTS

SOME OF THE 927-TECH GROUP ENDORSING THESE COMMENTS

W2DB
George Csahani
10100 Carson Ranch Rd
Crowley, TX 76036

W2YMM
Robert Prybyzerski, Jr
642 Alwick Ave
West Islip, NY 11795

K3TD
Thaddeus "Tad" Danley
622 Rio Grande Loop
Georgetown, TX 78633

K5JR
James "Mike" Roden
264 Traditions Dr
Alpharetta, GA 30004

K5JRN
Silas "Si" Dunn, III
123 Dean Avenue Apt 3306
Franklin, MA 02038

KB5KWV
Eldon Clark
18401 SE 104th St
Newalla, OK 74857

K5KTF
James Kinter, Jr
PO BOX 1183
Leander, TX 78646

K5TRA
Thomas Apel
7221 Covered Bridge Dr
Austin, TX 78736

K5SXK
Harold Reasoner
1222 Johnson Dr
Fort Worth, TX 76126

K5UUT
Louis Bancook
2201 Four Hills Ct
Pflugerville, TX 78660

W5DVG
Patrick Rogers
13219 Briar Hollow
Austin, TX 78729

W5TEY
Thomas "Tom" Yturri
15325 SE 41st Street
Choctaw, OK 73020

N5VLV
Curtis W Lechner
102 River Knoll
Castroville, TX 78009

WA5TV
Paul Brown, Jr
709 Wayland Dr
Arlington, TX 76012

WA5YZD
Roy Walker, JR
10802 Catthorn Cove
Austin, TX 78759

WD5EMS
Tommy Taylor
2406 Chestnut Path
Round Rock, TX 78664

WM5L
James Clark
4805 Scarlet Oak Dr
San Angelo, TX 76904

KB6HPD
Mark Ruggiero
PO BOX 983
Mariposa, CA 95338

KD6KPC
Garrett Dow
PO Box 96
Gresham, OR 97030

KJ6KO
Gregory Stahlman
4498 Lon Ct.
Diamond Springs, CA 95619

KN6KKZ
Vincent Fischer
725 Clover Dr.
Ione, CA 95640

KD7F
James "Jim" Summers
14311 E 7th AVE
Spokane Valley, WA 99216

KJ7IY
Ronald “Ron” Polluconi, Jr
17880 NW Deercreek Ct
Portland, OR 97229

N7CVR
Charles Robertson
13601 W McMillan Rd, # 218
Boise, ID 83713

N7GLV
Joel Cusson
PO BOX 625
Gresham, OR 97030

N7TTQ
Jeffrey Williams
12080 Sherry Ridge Rd
Soldiers Grove, WI 54655

NB7C
Carl Sorensen
11 SO 13th St
Payette, ID 83661

NN7W
Terry Conner
PO BOX 312069
New Braunfels, TX 78131

K8MDM
Michael Martin
202 W Sandtown Rd SW
Marietta, GA 30064

WB0BMY
Karl Kasel
1554 Jonathon St
Vista, CA 92083

KE0FF
Joseph Haas
4301 Yellowstone Dr.
Taylor, TX 76574